FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 29 to April 4, 2015 (week 13)

Overall Summary

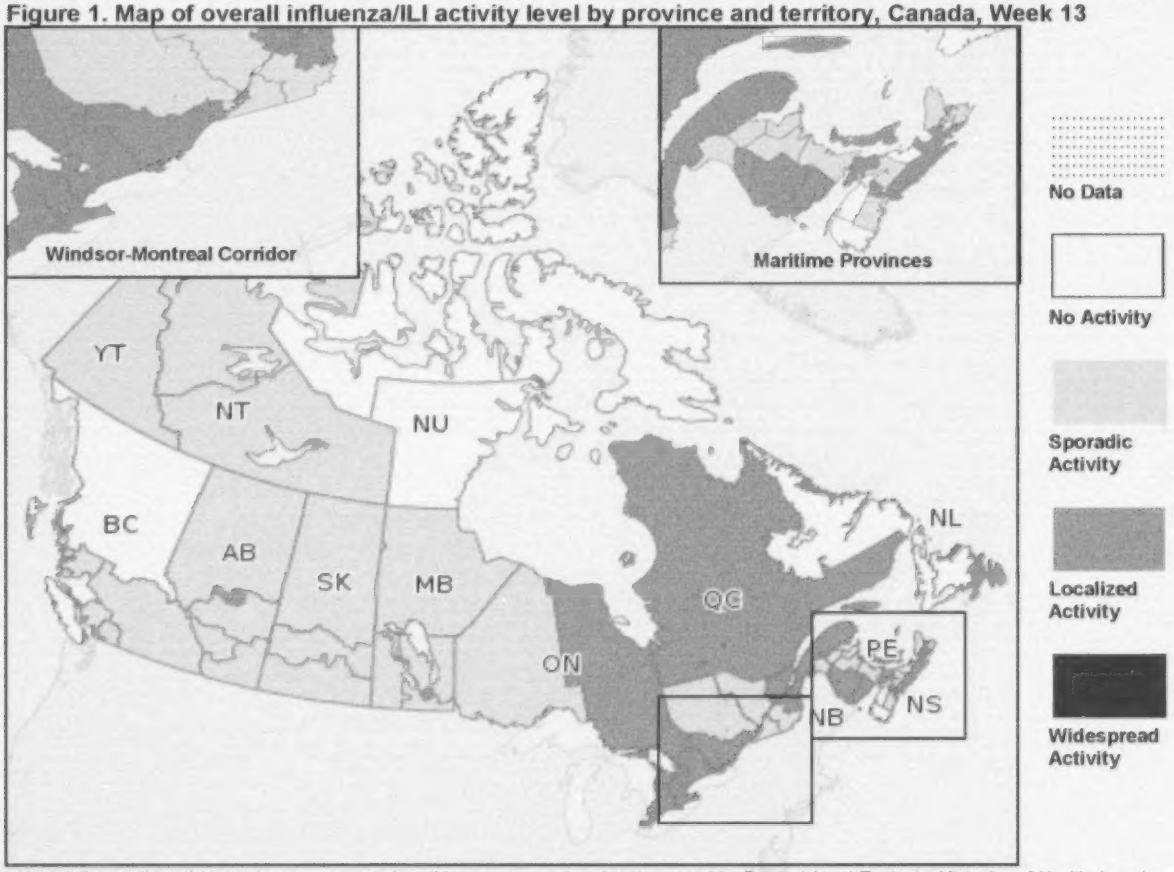
- The majority of influenza activity continues to occur in the Central and Atlantic province however, less activity was reported this week from these regions.
- The number of influenza A and B detections decreased this week.
- Influenza B is having a greater impact on adults less than 65 years of age, compared to influenza A(H3N2), which circulated earlier in the season.
- Evidence from the National Microbiology Laboratory (NML) indicates that this year's vaccine will continue to provide protection against the circulating A(H1N1) and B strains.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 13, no regions reported widespread activity. Eighteen regions reported localized activity: AB, MB, ON(6), QC(3), NB(2), NS(3), PE and NL. Twenty-nine regions reported sporadic activity: in YK, NT(2), BC(3), AB(4), SK(3), MB(4), ON. QC(3), NB(5), and NS(3). Eleven regions reported no activity: NU(3), BC(2), NS(3), and NL(3).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 13

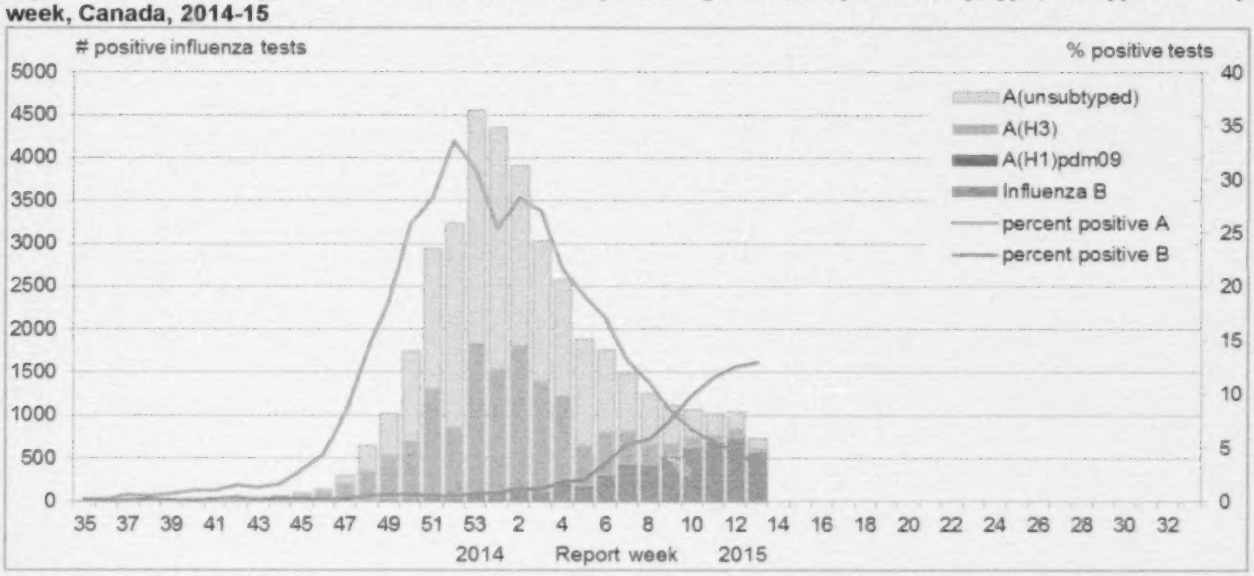


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

In week 13, the percentage positive for influenza A (3.4%) continued to decline from the previous week while the percentage of positive influenza B tests continued to increase (12.9%) (Figure 2). Influenza B detections were greater than influenza A in all provinces except NS. More influenza B has been observed to date this season (5,521) compared to the same time during the 2013-14 season (4,371). To date, 86% of influenza detections have been influenza A, and 99.3% of those subtyped have been A(H3N2) (Table 1). To date this season, detailed information on age and type/subtype has been received for 34,604 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections. Influenza B, while much smaller in numbers, is mainly affecting individuals less than 65 years of age, they account for 60% of influenza B detections.

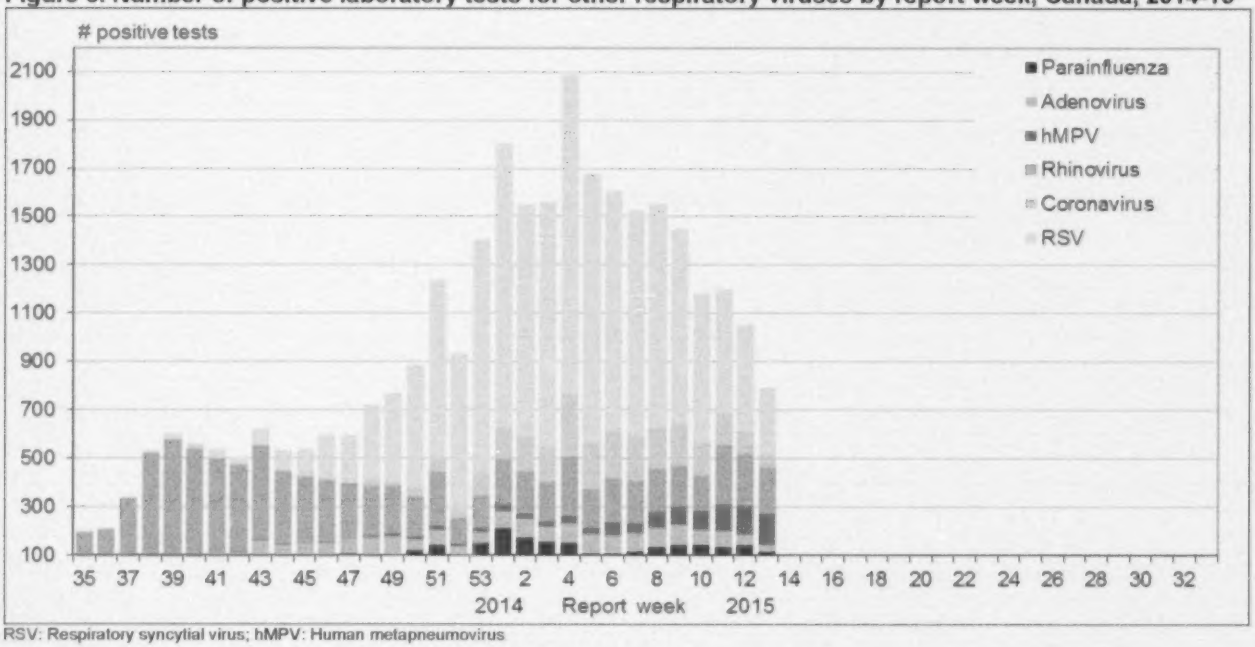
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15



In week 13, detections for all other respiratory viruses remained similar to, or decreased from, the previous week (Figure 3). Overall, the detections of other respiratory viruses have been declining since peaking in week 5.

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15

Reporting provinces[1]	Weekly (March 29 to April 4, 2015)					Cumulative (August 24, 2014 to April 4, 2015)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	7	0	0	7	24	3495	25	2603	867	321
AB	14	0	11	3	45	3680	13	3513	154	712
SK	1	0	0	1	10	1312	0	839	473	150
MB	1	0	1	0	13	1121	0	390	731	103
ON	60	1	25	34	104	11028	43	4633	6352	758
QC	20	0	0	20	274	11352	4	422	10926	2848
NB	30	0	5	25	62	1147	0	180	967	318
NS	16	0	0	16	16	503	0	123	380	225
PE	1	0	1	0	16	121	1	118	2	62
NL	2	0	0	2	5	612	0	123	489	24
Canada	**152**	**1**	**43**	**108**	**569**	**34371**	**86**	**12944**	**21341**	**5521**
Percentage[2]	21.1%	0.7%	28.3%	71.1%	78.9%	86.2%	0.3%	37.7%	62.1%	13.8%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15

Age groups (years)	Weekly (March 29 to April 4, 2015)					Cumulative (August 24, 2014 to April 4, 2015)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	3	0	0	3	32	2073	18	805	1250	351	2424	7.0%
5-19	4	0	0	4	35	1770	6	951	813	536	2306	6.7%
20-44	6	0	0	6	54	3419	16	1652	1751	748	4167	12.0%
45-64	7	0	1	6	98	3835	17	1639	2179	1247	5082	14.7%
65+	46	0	17	29	168	18602	13	7215	11374	1897	20499	59.2%
Unknown	0	0	0	0	0	121	0	100	21	5	126	0.4%
Total	66	0	18	48	387	29820	70	12362	17388	4784	34604	100.0%
Percentage[2]	14.6%	0.0%	27.3%	72.7%	85.4%	86.2%	0.2%	41.5%	58.3%	13.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,121 influenza viruses for resistance to oseltamivir and zanamivir. All viruses were sensitive to zanamivir and one influenza A(H3N2) virus was resistant to oseltamivir. A total of 1,235 influenza A viruses (99.9%) were resistant to amantadine (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	834	1	834	0	1230	1229 (99.9%)
A (H1N1)	6	0	6	0	6	6 (100%)
B	281	0	281	0	NA[1]	NA[1]
TOTAL	1121	1	1121	0	1236	1235

[1]NA: Not Applicable

Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 558 influenza viruses [179 A(H3N2), 9 A(H1N1) and 370 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assay (n=179), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 173 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 1,035 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 1,033 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Nine A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 370 influenza B viruses characterized, 351 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and 16 were B/Brisbane/60/2008-like (Figure 4).

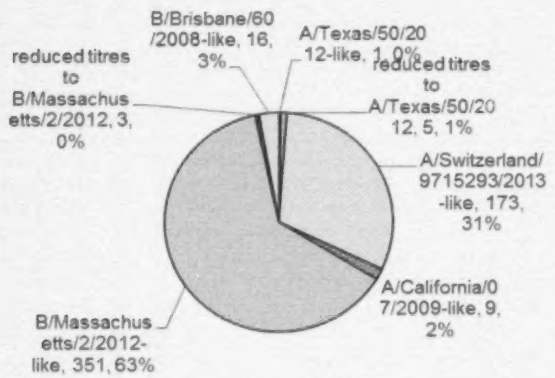

B/Brisbane/60 /2008-like, 16, 3%
A/Texas/50/20 12-like, 1, 0%
reduced titres to B/Massachus etts/2/2012, 3, 0%
reduced titres to A/Texas/50/20 12, 5, 1%
A/Switzerland/ 9715293/2013 -like, 173, 31%
A/California/0 7/2009-like, 9, 2%
B/Massachus etts/2/2012-like, 351, 63%

Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 558

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

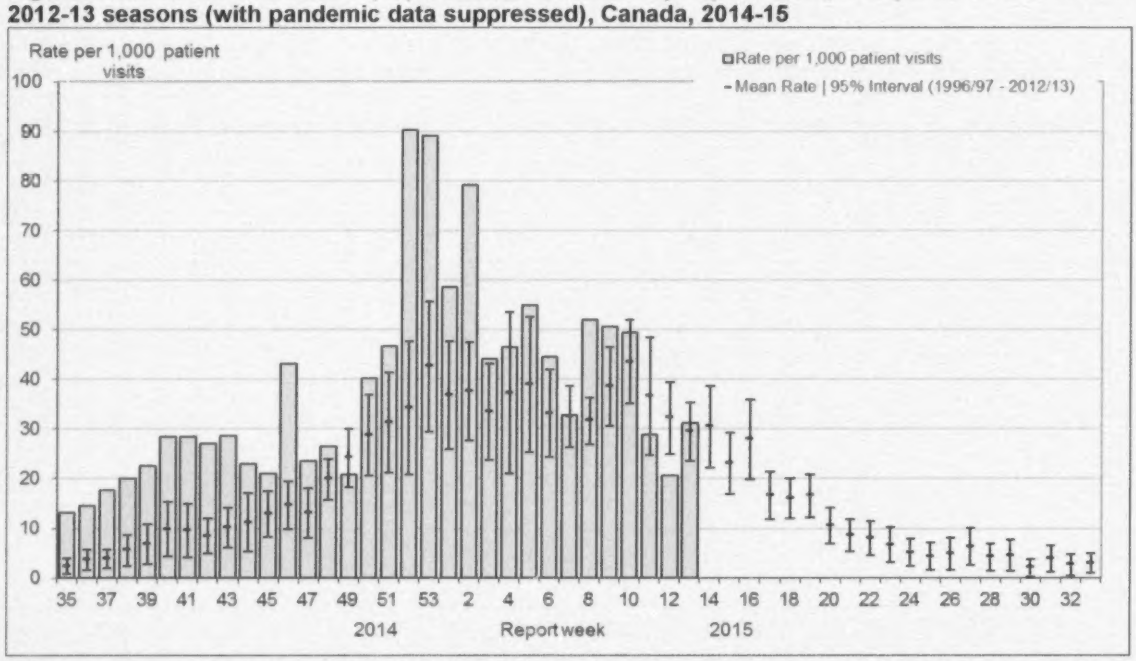
The recommended components for the 2014-2015 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Texas/50/2012 (H3N2)-like virus, and a B/Massachusetts/2/2012-like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus is recommended.

The WHO has released the recommended composition of the influenza vaccine for the northern hemisphere for the 2015-2016 season. Trivalent vaccines are recommended to contain 1) an A/California/7/2009 (H1N1)pdm09-like virus 2) an A/Switzerland/9715293/2013 (H3N2)-like virus, and 3) an B/Phuket/3073/2013-like virus(Yamagata lineage). Quadrivalent vaccines are recommended to additionally contain a B/Brisbane/60/2008-like virus (Victoria lineage).

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased in week 13 to 31.2 consultations per 1,000, which is within expected levels (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15

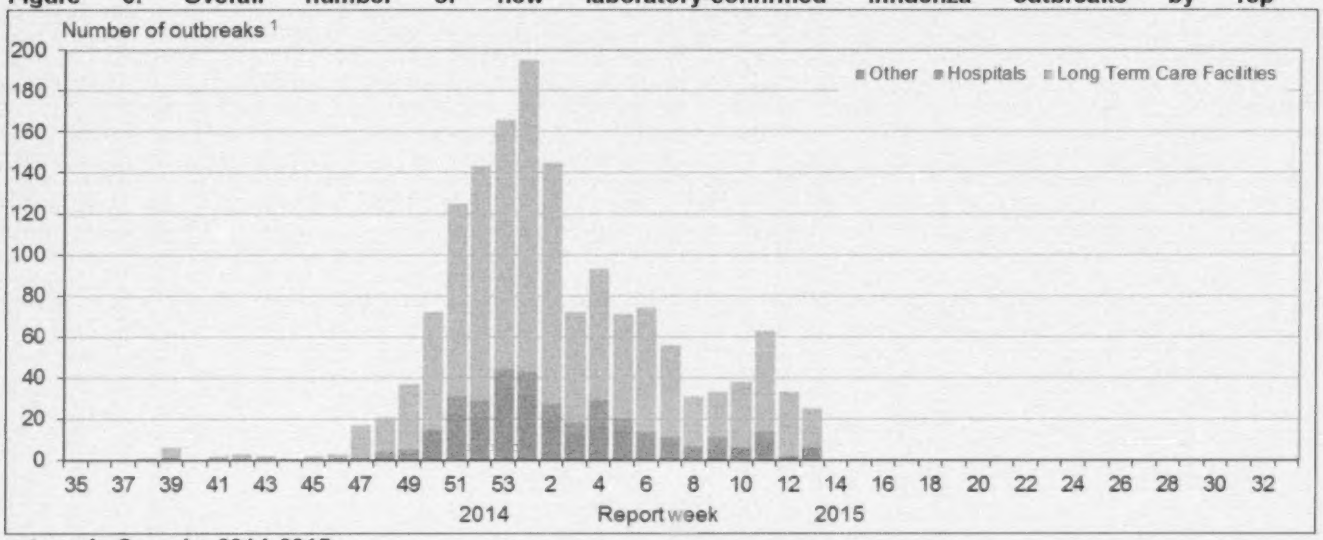


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 13, 25 new outbreaks of influenza were reported. The majority of the outbreaks occurred in the Central and Atlantic provinces. Nineteen outbreaks were reported in long-term care facilities (LTCF), one in hospitals and five in institutional or community settings (Figure 6). Among the outbreaks in which the influenza type was known (n=9), seven outbreaks were associated with influenza B. To date this season, 1,192 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015

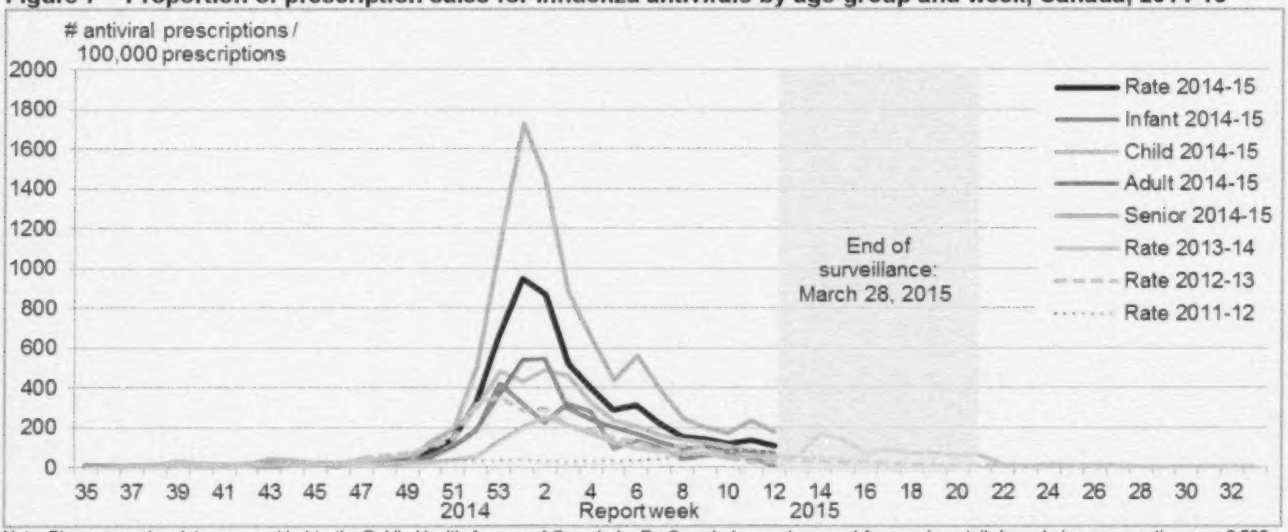


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has ended for the 2014-2015 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 13, 10 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All 10 cases were influenza B (Figure 8a). A greater proportion of cases have been reported with influenza B in recent weeks, following the trend in laboratory detections. Among the reported cases, two (20%) were <2 years of age, five (50%) were 2 to 9 years of age and three (30%) were 10-16 years of age. Three ICU admissions were reported.

To date this season, 629 hospitalizations have been reported by the IMPACT network, 502 (80%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 99% (162/164) were A(H3N2) (Table 4). To date, 82 cases were admitted to the ICU, of which 46 (56%) were 2 to 9 years of age (Figure 9a). A total of 54 ICU cases reported to have at least one underlying condition or comorbidity. Four deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 13, 24 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. Among the cases in week 13, 20 cases (83%) were in adults over the age of 65 and 14 cases (58%) had influenza B (Figure 8b).

To date this season, 2,101 cases have been reported; 1,887 (90%) with influenza A. The majority of cases (82%) were among adults ≥65 years of age (Table 5). One hundred and fifty four ICU admissions have been reported and 116 cases were adults ≥65 years of age. Among the 154 ICU admissions, 12 were due to influenza B (six in adults 45 to 64 years of age and six in adults over the age of 65). A total of 110 ICU cases (73%) reported to have at least one underlying condition or comorbidity. Of the 112 ICU cases with known immunization status, 38 (34%) reported not having been vaccinated this season. One hundred and twenty three deaths have been reported, 113 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15

Age groups	Cumulative (24 Aug. 2014 to 4 Apr. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	81	0	18	63	8	89 (14.1%)
6-23m	109	1	35	73	29	138 (21.9%)
2-4y	123	1	40	82	32	155 (24.6%)
5-9y	129	0	44	85	33	162 (25.8%)
10-16y	60	0	25	35	25	85 (13.5%)
Total	502	2	162	338	127	629
% [1]	79.8%	0.4%	32.3%	67.3%	20.2%	100.0%

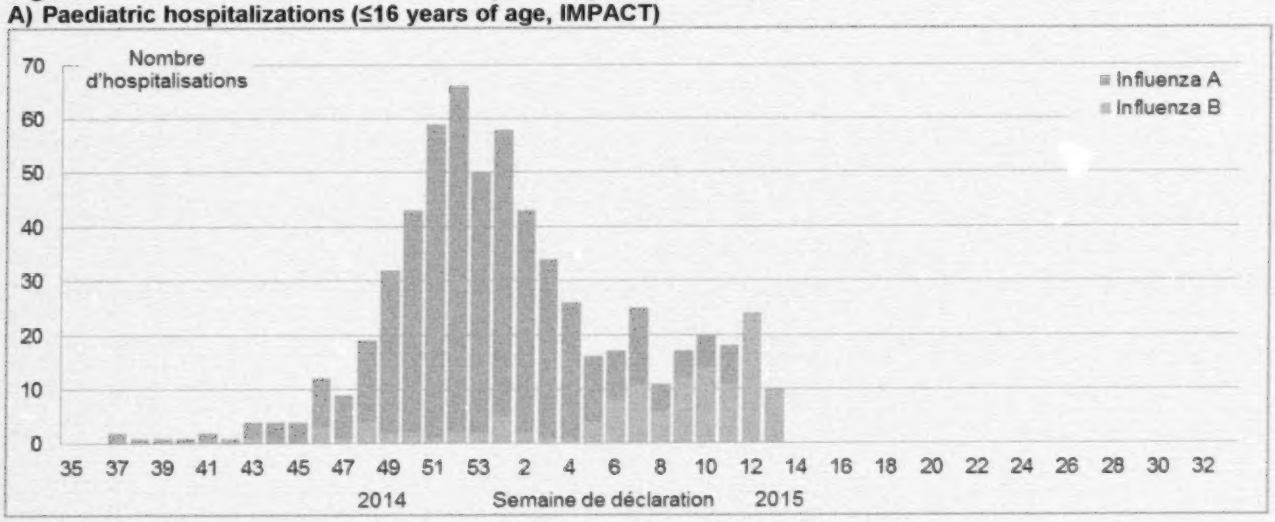
Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2014-15

Age groups (years)	Cumulative (15 Nov. 2014 to 4 Apr. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	0	1	2	1	4 (%)
20-44	105	1	54	50	10	115 (5%)
45-64	215	1	92	122	52	267 (13%)
65+	1564	3	734	827	151	1715 (82%)
Total	1887	5	881	1001	214	2101
%	90%	0%	47%	53%	10%	100%

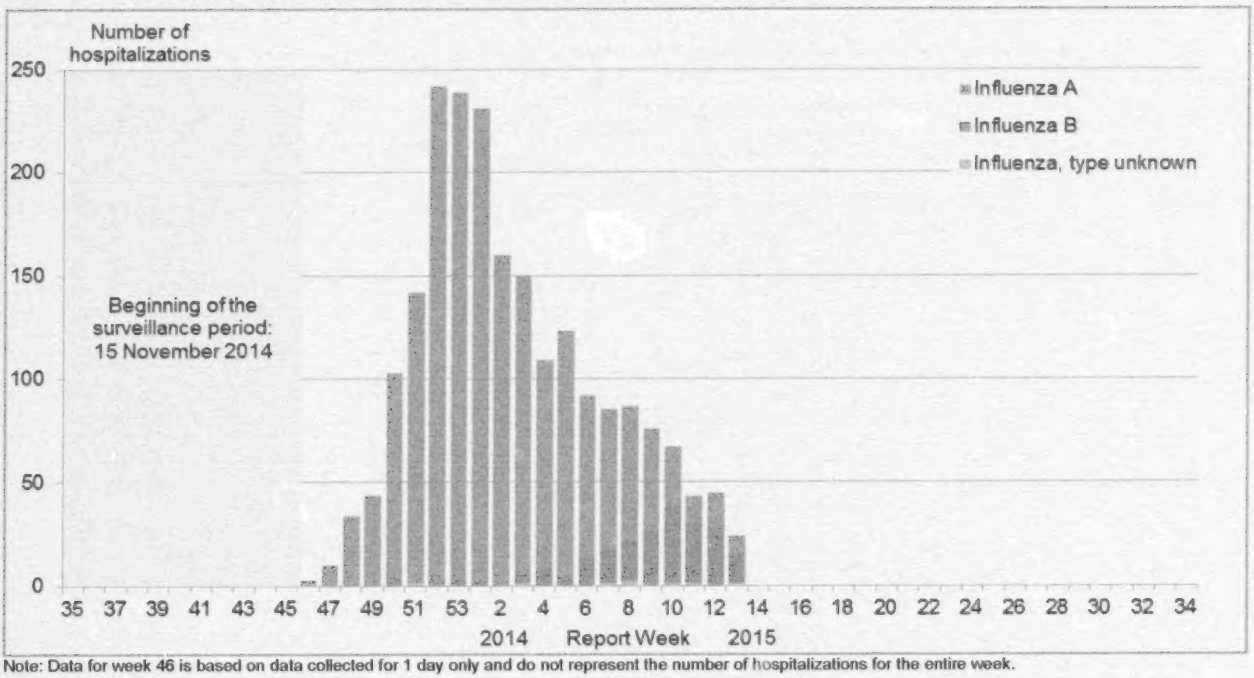
[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



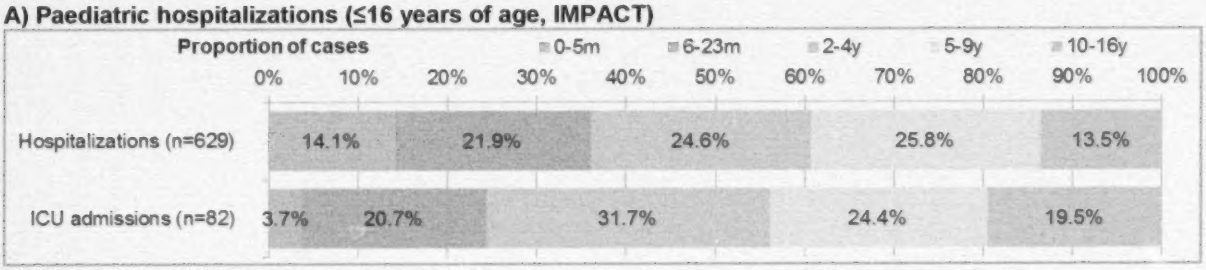
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



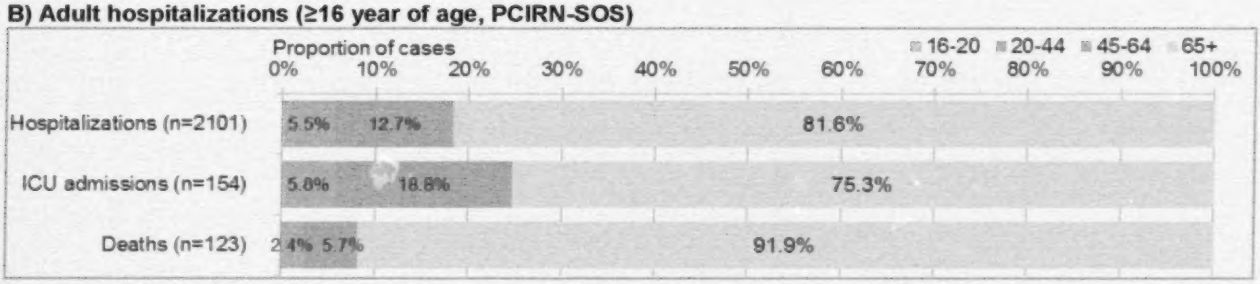
Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 13, 120 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*, which is less than the number reported the previous week. Of the 120 hospitalizations, 84 (70%) were due to influenza A and 82 (68%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 6,679 hospitalizations have been reported; 6,108 (91.5%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.5% were A(H3N2). The majority of cases (71%) were ≥65 years of age (Table 6). A total of 352 ICU admissions have been reported to date: 53% (n=188) were in adults ≥65 years of age and 33% (n=116) were in adults 20-64 years. A total of 493 deaths have been reported since the start of the season: four children <5 years of age, three children 5-19 years, 40 adults 20-64 years, and 446 adults ≥65 years of age. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15

Age groups (years)	Cumulative (24 Aug. 2014 to 4 Apr. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	401	2	143	256	45	446 (7%)
5-19	267	2	130	135	65	332 (5%)
20-44	371	3	223	145	72	443 (7%)
45-64	572	5	239	328	73	645 (10%)
65+	4441	2	2066	2373	298	4739 (71%)
Unknown	56	1	52	3	18	74 (1%)
Total	6108	15	2853	3240	571	6679
Percentage[1]	91.5%	0.2%	46.7%	53.0%	8.5%	100.0%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Since the last FluWatch report, no new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to April 9, 2015, the WHO reported a total of 631 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 221 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Influenza A(H5N6): Since the last FluWatch report, no new cases of human infection with avian influenza A (H5N6) virus from China has been reported by the World Health Organization. Globally to April 9, 2015, the WHO has been informed of a total of three cases of avian influenza A (H5N6) virus, including two deaths.

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the last FluWatch report, 12 new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization. Globally, from September 2012 to April 9, 2015, the WHO has reported a total of 1,102 laboratory-confirmed cases of infection with MERS-CoV, including 416 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on February 5, 2015: WHO MERS-CoV

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

Avian Influenza A(H5)

The Canadian Food Inspection Agency (CFIA)'s testing at the National Centre for Foreign Animal Diseases has confirmed the strain causing a new avian influenza outbreak on one farm near Woodstock, as a highly-pathogenic H5N2 virus. No human cases have been reported. Avian influenza viruses do not pose risks to food safety when poultry and poultry products are properly handled and cooked. Avian influenza rarely affects humans that do not have consistent contact with infected birds. Further information on the outbreak is provided on the following CFIA website:

CFIA - Notifiable Avian Influenza

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2014-2015 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.